

AMENDMENTS TO THE SPECIFICATION

Please replace the second full paragraph on page 1, beginning at line 6, with the following paragraph:

β) A lift-and-strike welding process, in particular a stud lift-and-strike welding process, has the advantage of industrial-scale capability combined with processing reliability with regard to, for example, reliable ignition of an arc. The lift-and-strike welding process is also less noisy than other welding processes. The lift-and-strike welding process is therefore used in numerous fields especially on account of its being economical to operate. Especially in the automobile industry, lift-and-strike welding has become an established technique. Aluminum and aluminum composite components are becoming increasingly popular as materials in the automobile industry on account of their low weight. From DE 195 244 90, for example, a lift-and-strike welding process is known, wherein an aluminum weld stud is welded to a workpiece made of aluminum. ~~According to said~~ In such a process, a the height of lift of the weld stud ~~is varied~~ will vary in dependence depending upon a the measured arc voltage. It is also known from said document that, to prevent a short circuit from being caused by melted material dripping from the weld stud, by reversing the a polarity at either the weld stud or ~~at the~~ workpiece ~~is reversed~~ during the welding operation. It is also known that, by reversing the polarity, a the formation of a the molten bath is may be varied.

Please delete, in its entirety, the paragraph that begins on page 1, line 27 and ends at page 2, line 2.

Please replace the paragraph beginning on page 2, line 4 with the following paragraph:

β2 ~~A first~~ The lift-and-strike welding process is such that, as a first step, a surface of a component is cleaned, namely by applying a first voltage so as to strike an arc between ~~an element~~ a stud to be connected to the surface, ~~in particular a stud~~, and the surface. In a second step, a polarity of the first voltage is reversed. Then the element is welded on by means of at least one second voltage.

Please replace the paragraph beginning on page 2, line 10 with the following paragraph:

β3 ~~Said~~ This process is particularly suitable for use with both steel sheets and aluminium sheets, which have either an organic or zinc coating ~~or are zinc-coated~~. The zinc coating may be electro-plated or galvanised or may be Bonazink. The coating may also consist of accumulated dirt or the like. For example, it has proved particularly suitable to use the process for the welding of steel sheets having a sheet thickness of 1 to 0.5 mm and less which has a zinc protection layer, e.g. in the case of hot galvanising, of 70 µm and less, e.g. also in the case of thin zinc protection layers, of 30 to 3 µm or even less. The cleaning process is very precisely adaptable to the surface to be cleaned and is also suitable for very thin coatings. There now follows a detailed description of the mode of operation of the invention with reference to a machining of a component made of aluminium. The features described below are however also applicable to the welding of a corresponding steel ~~component, in particular a steel sheet~~.

Please replace the paragraph beginning on page 2, line 23 with the following paragraph:

BY Aluminium components which are cold formed, in particular deep drawn, have a surface coating in the form of a lubricant. Said lubricant prevents cold welding between the aluminium workpiece and a machining tool. The lubricant moreover reduces the friction force which arises. An organic coating, in particular a wax or oil-based coating is often used. By striking an a cleaning arc ~~as a cleaning arc~~, the effect is achieved that the organically based coating as a result of overheating by the arc volatilises leaving no significant residues, in particular leaving no residue, and/or is displaced from the welding region. The subsequent actual welding operation by means of e.g. a pilot current and subsequent welding current of the lift-and-strike welding process allows the element, which is to be welded on, to be dipped into a weld pool of the aluminium surface which is not contaminated with the previous coating.

Please replace the paragraph beginning on page 7, line 21 with the following paragraph:

15 Besides the previously described features, the measures for controlling and/or regulating the weld stud which are known from DE 195 244 90 are moreover also applicable for effecting both the steel sheet and the aluminium lift-and-strike welding process. In particular, it has proved advantageous to use, for welding-on, stud geometries of the type disclosed in DE 196 11 711. ~~Express reference is hereby made to the respective technical teaching of both documents.~~

Please replace the paragraph beginning on page 7, line 28 with the following paragraph:

B6 An aluminium lift-and-strike welding apparatus is further provided in the present invention. The apparatus comprises a guide for a weld-on element and a control device for the guide. The guide is, for example, a welding head, a welding gun or a housing for fixing and lifting the weld-on element. The apparatus further comprises a device for controlling or regulating the electric current and/or the voltage used for welding, wherein the apparatus has a polarity reversing means for the voltage used for welding. The device for controlling or regulating the electric current and/or the voltage is programmed or designed so as to produce, prior to the welding operation, a cleaning current which has a reverse polarity relative to the welding current. The apparatus may be used in particular to effect a process in accordance with the above description.

Please amend the drawings descriptions on pages 8 – 9 as follows:

B7 Fig. 1 shows a characteristic of a distance S and of an electric cleaning current I in a first step of the lift-and-strike welding process of the present invention;

Fig. 2 shows the characteristic of the distance S and of the electric current I in a welding step as a third step of the process of the present invention;

Fig. 3 shows a development in the form of a combination of the first step, a second step and the third step of the present invention;

Fig. 4 shows an embodiment of an apparatus for implementing the process of the present invention;

Fig. 5 shows a sketch of ~~the~~ a diagrammatic embodiment of an apparatus for implementing the process of the present invention;

Fig. 6 shows a circuit diagram of a polarity reversing ~~means~~ device of the present invention; and

Please add the following paragraph at page 13, line 20:

In general, the above identified embodiments are not to be construed as limiting the breadth of the present invention. It will be understood that modifications or other alternative constructions may become apparent within the scope of the invention as defined in the appended claims.